B/Response 7-10-03

PATENT
Attorney Docket No. SEL 170

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Masahiko Hayakawa, et al.

Serial No.: 09/532,915

Filed: March 22, 2000

Examiner: Ahmed N. Sefer

Art Unit: 2826

For: SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

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DATE: June 19, 2003

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO FINAL REJECTION

Dear Sir:

We are in receipt of the Office Action dated February 4, 2003, and the following remarks are made in light thereof.

Claims 1-11 and 14-57 are pending in this application. Pursuant to the Office Action, Claims 1-3, 5, 6 and 10 are rejected under 35 USC 102 (b) over Iyer et al. WO 99/10918. Further, claims 4, 7, 8, 9 and 11 are rejected under 35 USC 103(a) over Iyer et al. Claims 18-21 are rejected under 35 USC 103(a) over Iyer et al. in view of Van der Groen et al., U.S. 6,093,577. Claims 14-17 and 22-57 are rejected based upon the Examiner's Official Notice regarding what is "conventional and well known." These rejections are made FINAL.

The present invention relates to a semiconductor device. The semiconductor device comprises a silicon oxide nitride film. The semiconductor device further comprises a semiconductor film formed over the silicon oxide nitride film. The silicon oxide nitride film ranges from 0.3 to 1.6 in a ratio of the concentration of nitrogen to the concentration of silicon, or ranges from 0.1 to 1.7 in a ratio of the concentration of oxygen to the concentration of silicon.

The Examiner cites Iyer et al. for disclosing, among other things, an active region 120 formed over the silicon oxide nitride film. However, reference numeral 120 of Iyer et al. designates regions where the patterned oxidation diffusion barrier stack remains on the silicon wafer 100, as described on page 12, lines 18-19 of Iyer et al. Further, as set forth on page 12, lines 19-20 of Iyer et al., individual or multiple active devices can subsequently be formed in the active regions 120 of the substrate 100. Because of "the active regions 120 of the substrate 100" mentioned on page 12, line 20 of Iyer et al., the active region 120 is provided in the substrate 100 which is a silicon wafer. Therefore, the active region 120 is provided under an ARC 106 which comprises a silicon-rich oxynitride, for example. In contrast, in the present invention, as set forth in claims 1-11 and 14-57, a semiconductor film is provided over a silicon oxide nitride film.

For the reasons above, the present invention as claimed in claims 1-3, 5, 6 and 10 is not anticipated by Iyer et al. Further, the present invention as claimed in claims 4, 7, 8, 9 and 11 would not have been obvious over Iyer et al.

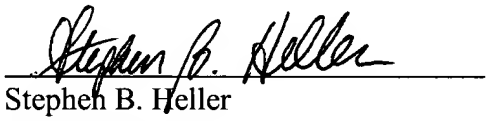
Turning to the rejection of claims 18-21, Iyer et al. has been addressed above. Van der Groen et al. is cited for disclosing a semiconductor film comprising a channel forming region provided over an insulating underlying film 13; a gate insulating film provided channel forming region; and a gate electrode provided adjacent to the channel forming region and over the gate

insulating film. However, Van der Groen et al. does not disclose or suggest that a silicon oxide nitride film ranges from 0.3 to 1.6 in a ratio of the concentration of nitrogen to the concentration of silicon (as required by Claims 18 and 20), or ranges from 0.1 to 1.7 in a ratio of the concentration of oxygen to the concentration of silicon (as required by Claims 19 and 21). Thus, even if Iyer et al. and Van der Groen et al. are combined, the present invention as claimed in claims 18-21 is not obtained.

Claims 14-17 are dependent from Claims 1-4, respectively, while each of claims 22-57 is dependent from one of claims 18-21. Applicant believes that each of claims 14-17 and 22-57 is patentable for at least the same reason as its base claim.

Based on the foregoing, Applicant respectfully requests the Examiner to reconsider and allow the pending claims.

Respectfully submitted,



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